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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/086,543	03/04/2002	Daisuke Kojima	112117	2272

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EXAMINER

PIZIALI, JEFFREY J

ART UNIT	PAPER NUMBER
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2673

DATE MAILED: 09/20/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/086,543

Applicant(s)

KOJIMA ET AL.

Examiner

Jeff Piziali

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 31 January 2005 & 23 June 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-35 is/are pending in the application.
- 4a) Of the above claim(s) 3,4,6-11,14-29,31,32,34 and 35 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,2,5,12,13,30 and 33 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 23 June 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- 1) ☒ Certified copies of the priority documents have been received.
 - 2) ☐ Certified copies of the priority documents have been received in Application No. _____.
 - 3) ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Election/Restrictions

1. Claims 3-4, 6-11, 14-29, 31, 32, 34, and 35 are withdrawn from further consideration pursuant to 37 CFR 1.142(b), as being drawn to a nonelected species, there being no allowable generic or linking claim. Applicants timely traversed the restriction (election) requirement in the reply filed 24 August 2004.
2. Applicants' election with traverse of Species I in the reply filed 24 August 2004 is acknowledged. The traversal is on the ground that the subject matter of all species is sufficiently related that a thorough search for the subject matter of any one species would encompass a search for the subject matter of the remaining species. This is not found persuasive because MPEP §808.01(a), regarding Species Requirement states, "Since the claims are directed to independent inventions, restriction is proper pursuant to 35 U.S.C. 121, and *it is not necessary to show a separate status in the art or separate classification*" (emphasis added). While the field of search for one species may well overlap the field of search for another species, this does not alter the fact that each species constitutes an independent and distinct invention.

The requirement is still deemed proper and is therefore made FINAL.

3. This application contains claims 3-4, 6-11, 14-29, 31, 32, 34, and 35 drawn to an invention nonelected with traverse in the reply filed 24 August 2004. A complete reply to the

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final rejection must include cancellation of nonelected claims or other appropriate action (37 CFR 1.144) See MPEP § 821.01.

4. Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim remaining in the application. Any amendment of inventorship must be accompanied by a request under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(i).

Priority

5. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Drawings

6. The drawings were received on 23 June 2005. These drawings are acceptable.

Claim Rejections - 35 USC § 102

7. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

8. Claims 1, 2, 5, 12, 13, 30, and 33 are rejected under 35 U.S.C. 102(b) as being anticipated by Hirakawa et al. (US 6,097,358).

Regarding claim 1, Hirakawa discloses a driving method of an electro-optic element [Fig. 1; C] for allowing said electro-optic element to display a level of grayscale, said electro-optic element displaying throughout a frame period [Fig. 3; F] by switching ON-state said electro-optic element during a period corresponding to grayscale data that defines said level of grayscale, said method comprising: sequentially selecting, according to said grayscale data, a plurality of first sub-field periods [Fig. 3; SF1-SF5] continuous with respect to one another and a plurality of second sub-field periods [Fig. 3; SF6-SF10] continuous with respect to one another used for securing a period corresponding to said grayscale data, said plurality of second sub-field periods following consecutively said plurality of first sub-field periods, each of said plurality of second sub-field periods substantially corresponding to a length of a sum of said plurality of first sub-field periods and any one of the first sub-field periods, in a direction from a first sub-field period and a second sub-field period positioned on a boundary [Fig. 3; TR] of said plurality of first sub-field periods and said plurality of second sub-field periods toward a first sub-field period and a second sub-field period at a position most remote from said boundary; and driving by switching ON-state said electro-optic element during said sub-field periods selected (see Column 6, Line 23 - Column 9, Line 21).

Regarding claim 2, Hirakawa discloses said plurality of first sub-field periods and said plurality of second sub-field periods being included in a same frame period (see Column 7, Lines 57-65).

Regarding claim 5, Hirakawa discloses a period during which said electro-optic element is switched ON-state being inserted in said boundary regardless of said grayscale data (see Fig. 3; Column 8, Lines 44-67).

Regarding claim 12, Hirakawa discloses said grayscale data being composed of N bits (N is an integer not less than 2) to define a level of grayscale having 2 to the N^{th} power kinds; high-order M bits in said N bits defining a level of grayscale said plurality of second sub-field periods should display; low-order (N-M) bits in said N bits defining a level of grayscale said plurality of first sub-field periods should display; and said M is an optimal solution of M given on an assumption that said frame period includes $(2^{N-M}-1)$ first sub-field periods (see Column 6, Line 23 - Column 9, Line 21).

Regarding claim 13, Hirakawa discloses said grayscale data being composed of N bits (N is an integer not less than 2) to define a level of grayscale having 2 to the N^{th} power kinds; a length of each of said second sub-field periods being equal to a length of a period to display a level of grayscale defined by a least significant bit in high-order M bits in said N bits; the number of said plurality of second sub-field periods being equal to a maximum value specified by said M bits; a length of each of said first sub-field periods being equal to a length of a period to display a level of grayscale defined by a least significant bit in low-order (N-M) bits in said N bits; and the number of said plurality of first sub-field periods being equal to a maximum value specified by said (N-M) bits (see Column 6, Line 23 - Column 9, Line 21).

Regarding claim 30, this claim is rejected by the reasoning applied to claim 1; furthermore Hirakawa discloses a driving device [Fig. 1; 80] of an electro-optic element [Fig. 1; C] for allowing said electro-optic element to display a level of grayscale said electro-optic element displays throughout a frame period [Fig. 3; F] by switching ON-state said electro-optic element during a period corresponding to grayscale data that defines said level of grayscale, said device comprising: a selecting circuit that sequentially selects, according to said grayscale data, a plurality of first sub-field periods [Fig. 3; SF1-SF5] continuous with respect to one another and a plurality of second sub-field periods [Fig. 3; SF6-SF10] continuous with respect to one another used for specifying the period corresponding to said grayscale data, said plurality of second sub-field periods following consecutively said plurality of first sub-field periods, each of said plurality of second sub-field periods substantially corresponding to a length of a sum of said plurality of first sub-field periods and any one of first sub-field periods, in a direction from a first sub-field period and a second sub-field period positioned on a boundary [Fig. 3; TR] of said plurality of first sub-field periods and said plurality of second sub-field periods toward a first sub-field period and a second sub-field period at a remotest position from said boundary; and a driving circuit that switches ON-state said electro-optic element during said subfield periods selected (see Column 6, Line 23 - Column 9, Line 21).

Regarding claim 33, Hirakawa discloses electronic equipment, comprising: a display device [Fig. 1; 100], including a plurality of electro-optic elements aligned in a matrix [Fig. 1; 1], that displays an image related to said electronic equipment (see Column 6, Lines 23-67).

Response to Arguments

9. Applicants' arguments filed 31 January 2005 have been fully considered but they are not persuasive. The applicants assert the amendments (filed 31 January 2005) to claims 12 and 30 do not result in a narrowing of the respective claims (see Page 15, Lines 1-9 of the Remarks filed 31 January 2005). However, the examiner respectfully disagrees. The aforementioned amendments (for instance, adding a new formula for calculating first sub-field periods to claim 12, and changing when/if an electro-optic element displays throughout a frame period in independent claim 30) dramatically alter the scope of both respective claims, as well as any dependencies off these claims.

The applicants also contend the cited prior art of Hirakawa et al. (US 6,097,358) neglects teaching sequentially selecting in a direction from a first sub-field period and a second sub-field period positioned on a boundary of the plurality of first sub-field periods and the plurality of second sub-field periods toward a first sub-field period and a second sub-field period at a position most remote from the boundary (see Page 15, Lines 14-18 of the Remarks filed 31 January 2005). Again, the examiner respectfully disagrees.

The applicants admit, "the address preparation period [Fig. 3; TR] is positioned on a boundary between different sub-field groups [Fig. 3; SFG1-SFG3]" (see Page 16, Lines 9-10 of the Remarks filed 31 January 2005), but dispute that Hirakawa teaches sequentially selecting in a direction from a first sub-field period and a second sub-field period positioned on a boundary of the plurality of first sub-field periods and the plurality of second sub-field periods toward a first

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sub-field period and a second sub-field period at a position most remote from the boundary (see Page 16, Lines 10-15 of the Remarks filed 31 January 2005).

However, the examiner respectfully counters that Hirakawa does indeed disclose sequentially selecting in a direction from a first sub-field period [Fig. 3; SF5 in the first display frame/field "F," for instance] and a second sub-field period [Fig. 3; SF6 in the first display frame/field "F," for instance] positioned on a boundary [Fig. 3; the TR between SF5 and SF6 in the first display frame/field "F," for instance] of the plurality of first sub-field periods [Fig. 3; SF1-SF5 in the first display frame/field "F," for instance] and the plurality of second sub-field periods [Fig. 3; SF6-SF10 in the first display frame/field "F," for instance] toward a first sub-field period [Fig. 3; SF1 in the second display frame/field "F," for instance] and a second sub-field period [Fig. 3; SF10 in the second display frame/field "F," for instance] at a position most remote from the boundary (see Fig. 3; Column 7, Line 55 - Column 8, Line 22).

The applicants further argue Hirakawa fails to disclose each of the plurality of second sub-field periods substantially corresponding to a length of a sum of the plurality of first sub-field periods and any one of the first sub-field periods (see Page 15, Lines 19-21 of the Remarks filed 31 January 2005). Again, the examiner respectfully disagrees.

The applicants admit, "Hirakawa teaches that a weight of luminance of each of the sub-fields [Fig. 3; SF6-SF10] of the second group [Fig. 3; SFG2] is an integer multiple of the minimum weight '1' and equal to one plus the total sum of the weights smaller than themselves (1 + (the sum of the weights in the first sub-field group [Fig. 3; SFG1]), i.e., $6 = (1 \times 5) + 1$ " (see Page 16, Lines 16-19 of the Remarks filed 31 January 2005). However, the applicants then

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assert, "Hirakawa teaches that the term 'weights' are luminance weights of the sub-fields, not 'lengths' of a period" (see Page 16, Lines 19-21 of the Remarks filed 31 January 2005).

On the contrary, the examiner respectfully counters that Hirakawa teaches that "a weighted luminance" represents a "number of discharges" (see Column 1, Lines 59-65). Knowing that each such discharge must necessarily and inherently constitute a "length of a period," Hirakawa does indeed disclose each of the plurality of second sub-field periods [Fig. 3; SF6-SF10, for instance] substantially corresponding to a length of a sum of the plurality of first sub-field periods [Fig. 3; SF1-SF5, for instance] and any one of the first sub-field periods [Fig. 3; SF1, for instance] (see Column 7, Line 57 - Column 8, Line 22 -- i.e. (6 discharge periods = (1 x 5 discharge periods) + 1 discharge period), for instance).

By such reasoning, rejection of the claims is deemed necessary, proper, and thereby maintained at this time.

Conclusion

10. Applicants' amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37

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CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jeff Piziali whose telephone number is (571) 272-7678. The examiner can normally be reached on Monday - Friday (6:30AM - 3PM).


If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Bipin Shalwala can be reached on (571) 272-7681. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



J.P.

16 September 2005



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